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## 1. FOREMOST REQUIREMENT:

- A, FOR SYSTEMS THAT ROLL ABOUT THE VEHICLE LONGITUDINAL AXIS, DISASSOCIATE THE S/I PACKAGE FROM THE ROLLING MAIN CAMERA SYSTEM SO IT DOES NOT ROLL. THEN THE OPTICAL AXIS OF THE STELLAR CAMERA SHOULD POINT AT ORBITAL POLE AND INDEX CAMERA TO NADIR REGARDLESS OF PROGRAMMED ROLL APPLIED TO MAIN CAMERA.
- B. IF IT IS IMPOSSIBLE TO PLACE THE S/I PACKAGE SUCH THAT IT DOES NOT ROLL WITH THE MAIN CAMERA SYSTEM, THEN INCREASE THE LOCK ANGLE OF THE S/I UNIT ENOUGH TO ENSURE CLEAR STELLAR VIEW WHEN MAIN CAMERA SYSTEM IS IN MAXIMUM DESIGNED ROLL POSITION.
- C. CONDITION A. IS MUCH PREFERRED OVER CONDITION B. HOWEVER, IN EITHER CASE IT IS NECESSARY TO KNOW THE CALIBRATED ANGULAR RELATIONSHIP BETWEEN THE S/I SYSTEM AND MAIN CAMERA SYSTEM. A DETERMINATION OF THESE ANGLES SHOULD BE MADE WITH BOTH SYSTEMS IN NOMINAL VERTICAL POSITIONS. PERHAPS BOTH SYSTEMS CAN BE MECHANICALLY TIED TOGETHER BUT STILL PERMITTING REQUIREMENTS STATED IN PARAGRAPH IA OR IB TO BE SATISFIED.
- 2. ASIDE FROM LOCK ANGLE, FOLLOWING IS PARTIAL LIST OF WHAT WOULD BE DESIREABLE IN FUTURE S/I SYSTEM.
  - A. STELLAR CAMERA

Declassification Review by NGA/DoD

25X1

GROUP 1 Excluded from automatic downgrading and declassification

TOP SECRET

- (1) CONE ANGLE OF NOT LESS THAN 28 TO 30 DEGREES
- (2) FOCAL LENGTH NOT GREATER THAN 3 IN. DEPENDING ON CONE ANGLE SELECTED
- (3) ROUND FORMAT
- (4) FIDUCIAL MARKS
- (5) SHRINKAGE REFERENCE MARKS (RESEAU)
- (6) COMPLETELY BLACKENED THROUGHOUT, INCLUDING LENS MOUNT AND INTERIOR OF CAMERA
- (7) ADEQUATELY BAFFLED SO THAT EARTH FLARE IS ELIMINATED
- (8) SEPARATE FILM FEED
- (9) BETWEEN THE LENS SHUTTER
- (10) BINARY TIME (29 BITS) ON EACH EXPOSURE
- (11) COMPLETE CALIBRATION OF THE ORIENTATION BETWEEN STELLAR AND INDEX CAMERAS
- (12) CALIBRATION OF PRINCIPAL POINT, FOCAL LENGTH, AND LENS DISTORTION
- OF FILM EITHER TO BE COMMENSURATE TO THE AMOUNT OF RADIATION IN ENVIRONMENT, OR FILM PATH TO BE SHIELDED TO PERMIT THE USE OF FASTER FILMS.
- (14) CYCLE TIME: TWO TO FIVE SECONDS
- (15) OPERATION INDEPENDENT OF ANY OTHER CAMERA
- B. INDEX CAMERA
  - (1) 3 TO 6 IN. FL WITH CONE ANGLE GREATER THAN 45 DEGREES. FL AND FORMAT SIZE TO DEPEND ON WEIGHT LIMITATIONS.

-3-

IF WEIGHT IS NO PROBLEM 6 IN. FL PREFERRED. FL SHOULD NOT BE LESS THAN 3 IN. LENS SHOULD HAVE HIGH RESOLVING POWER.

- (2) FIDUCIAL MARKS
- (3) SHRINKAGE REFERENCE MARKS (RESEAU)
- (4) CALIBRATION FOR POSITION OF PRINCIAPL POINT, FOCAL LENGTH AND LENS DISTORTION
- (5) SEPARATE FILM FEED
- (6) BETWEEN THE LENS SHUTTER
- (7) BINARY TIME (29 BITS) ON EACH EXPOSURE
- (8) OPERATION INDEPENDENT OF ANY OTHER CAMERA
- (9) SQUARE FORMAT
- (10) BLACKENED AND BAFFLED THROUGHOUT
- (11) CYCLE TIME TO ASSURE 60-65 PERCENT OVERLAP
- (12) SHUTTER SPEED RANGE AS DICTATED BY PAST EXPERIENCE GAINED WITH CORONA MISSIONS.
- 3. INCORPORATE "END OF PASS MARKER" FOR BOTH S AND I CAMERAS.
  TOPSECRET